TECHNICAL GUIDANCE COMMITTEE
FOR INDIVIDUAL AND SUBSURFACE SEWAGE DISPOSAL

December 02, 2003 MEETING MINUTES

PRESENT: Joe Canning, P.E., B&A Engineers
Dan Kriz, Environmental Health Director, SCDHD
Ken Babin, Supervisory REHS, PHD
Brian Crawford, REHS – SWDH
Barry Burnell, REHS - DEQ

ABSENT: Vacant, Licensed Installer

GUESTS: Blake Johnston, Infiltrator Systems Inc.
Alex Mauck, EZ Flow
Mark Mason, P.E., DEQ-Wastewater Program

The meeting was called to order at 8:30 am December 02, 2003. A sign in sheet was passed to the Committee and guests to sign in. The guests were asked to sign in and indicate if they were interested in presenting to the committee. No one indicated an interest to provide testimony. Appointment letter were distributed to Brian Crawford and Ken Babin. Brian Crawford was appointed to replace Mike Reno. Brian and Ken were appointed for three year terms.

December 11, 2002 TGC minutes - review, amend, and accept.

The Committee reviewed the minutes. Joe Canning moved that the committee accept the minutes. Dan Kriz seconded the motion and the committee voted in favor of accepting the 12/11/2002 TGC minutes as final. **See Appendix A**.

TGC Preliminary Approval Reviews for Final Approval
Pumps and Electrical Code
The Committee discussed the proposed revisions to the pressure distribution system section regarding pumps and electrical code. The change is to modify the dosing chamber design section #7 description for electrical requirements of individual residential systems and commercial or multiple residential systems. The three figures in design section #7 Dosing Chamber have been modified to reflect these changes..

For individual residential systems the electrical connection for the pump can be made in a weatherproof box and the electrical wires can run through rigid non-metallic conduit such as Schedule 80 PVC.

For commercial or multiple residential systems the electrical connection for the pump must be made in an explosion proof box and the wires must run through a rigid conduit.

Ken Babin moved to accept for final approval the Pressure Distribution System section. Joe Canning seconded the motion and the committee voted in favor of **final approval**. **See Appendix B** TGM page 51 to 59-1.
Product Reviews

EZ Flow – EPS Drainrock Substitute.

The committee had been given a packet of information from the EZ Flow Company requesting approval for use in Idaho of the 1203H and 1201P systems. Mr. Mauck was given an opportunity to present the information contained in the information packet to the committee. Mr. Mauck expressed his understanding of the June 5, 2000 TGC meeting. Mr. Mauck explained approvals EZ Flow Company has received from Washington, Nevada, Georgia and Texas. Mr. Mauck provided his recollection of review and asked for clarification of the TGC recommendations.
Mr. Mauck indicated that Washington State has approved the 1203H product at a 40% reduction. Mr. Mauck pointed out section for of the supplied information as being supportive of this request. Mr. Mauck asked the committee for approval of the 1201P system at $3ft^2/ft$.

Ken Babin stated that the Panhandle District Health Department had issued a few permits for 1201p products at $3ft^2/ft$. It was his opinion to size this product at the same sizing of a 3 feet wide standard system. He recalled that it was the TGC intention to keep this configuration on par with other products. Ken moved to recommend for approval to DEQ the 1201p system at 3 ft^2/ft and for the 1203H system at a 40% reduction. Dan Kriz seconded the motion.

Discussion was called for. DEQ explained its position on sizing, that the TGC has not recommended to DEQ to include sidewall in sizing recommendations as the sidewall infiltrative surface has been the margin of safety. Also the 1201P system is not equivalent to large diameter pipe. The product is not wrapped in geotextile and is filled with expanded polystyrene. DEQ explained that it had entered into a contract with NSF to develop a gravelless trench alternative approval protocol.

Ken expressed the case by case approach that the TGC has used in making recommendations to DEQ on product approvals. The best the TGC can do is look at the information provided by the manufacturer and make reasonable recommendations. Ken asked for DEQ to develop guidance for the TGC to use in making recommendations.

Joe asked about the methods of installation and if any products are recommended for covering the EZ Flow product. Mr. Mauck replied that the preferred material to use to prevent soil intrusion is 60 pound untreated building paper or straw and do not recommend the use of geotextile.

Brian asked about wastewater flow associated with product approvals and reductions in sizing. Brian mentioned that the flow rates for Washington state are much higher that for Idaho. The flow estimate for Washington State is 120 GPD/bedroom. Brian's suggestion was to keep the EZ flow systems on par at 40% reductions for each configuration. Brian expressed concern over the low wastewater flow estimates in Idaho's rules.

Blake Johnston requested to present to the committee. It was noted that he did not sign in and requested to testify. The Committee authorized Mr. Johnston to provide brief comments to the committee. Mr. Johnston pointed out the function of media is to store wastewater. The EPS media is an aggregate substitute and must be viewed as occupying void volume. Mr. Johnston provided a hand out to the committee to use in making their recommendation. Mr. Johnston pointed out that there is no long term acceptance rates established for this product.

Ken pointed out that many of these comments apply to all gravelless systems and that the TGC must rely on the materials presented in making a recommendation. He noted that after discussion that his motion stands and that he did not wish to amend the motion.

Joe discussed the information provided on aggregate void for EPS. He stated that he felt that there were sizing problems with large diameter pipe. He noted that bottom area and migration of fines in rock systems effect system performance. He expressed the need to re-look at all gravelless systems.

A call was made for the question:
The committee voted with 4 ayes to approve the motion.

Policy Development

A. Total Nitrogen Reduction
The TGC discussed the need to develop a policy for assigning total nitrogen reductions for complex systems that reduce total nitrogen from the wastewater. Information was presented from various ETPS systems in Idaho. The TGC discussed the structure of the TGM and the possibility of adding to the TGM a table assigning total nitrogen reductions to various complex systems.

The committee reviewed the information presented on RGFs, ISFs, and ATUs.

The TGC discussed the need to qualify data for inclusion into the TGM
Data sources were reviewed. NSF data and Experimental Testing and Verification (ETV) data were viewed as completely independent and verifiable. Third party data could be used under circumstances of study design to replicate northern tier states and full season testing. Product data from manufacturers needs additional evaluation to determine collection methods and sampling protocols. Local data of existing systems was presented and evaluated. This data is of limited duration and shows wide fluctuations.

The TGC concluded that there is a need to require data be submitted from NSF or ETV to be qualified data for evaluation. The data collection location and season needs to be considered for Idaho's four seasons and elevations from 1500 to 6000 feet above see level.

The committee worked on revising a proposed table for inclusion into the TGM as either a policy page or part of the operation and maintenance section of the TGM.

The following is a reprint of that draft work:

Total Nitrogen Reduction

Onsite wastewater systems that would qualify as Best Practical Methods (BPM) are:

- Recirculating Gravel Filters (40% NO_3-N reduction),
- Extended Treatment Package Systems (30% NO_3-N reduction),
- Intermittent Sand Filters (15% NO_3-N reduction) and
- Recirculating Extended Treatment Package Systems (50-70% reduction).

These systems reduce total Nitrogen from 45 mg/l to 27 mg/l and even as low as 16 mg/l NO_3-N (Table 1).

Table 1. Best Practical Methods for Onsite Wastewater Systems.

Best Practical Method	**Percent Total Nitrogen Reduction**	**Total Nitrogen mg/l**	**O&M Provider**
Recirculating Gravel Filters	40% [1]	27	Property Owner
Intermittent Sand Filters	15% [1]	38	Property Owner
Extended Treatment Package Systems	30%	32	Non-Profit O&M Corp
Biomicrobics	34% [2]	30	✓
Jet Inc.	32% [2]	31	✓
Norweco			✓
Delta/Whitewater			✓
Southern			✓
Nayadic			✓
Recirculating Extended Treatment Package Systems			Non-Profit O&M Corp
Advantex – OSI	65% [3]	16	✓
Norweco- Recirc Singulair	65% [4]	16	✓

[1]Literature Value
[2]Idaho Testing
[3]3rd party
[4] NSF

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Ken moved to recommend that DEQ adopt the Total Nitrogen Policy table as developed into the policy section of the TGM and to use NSF or ETV data to qualify for inclusion into the table. Joe seconded the Motion. The motion passed unanimously.

B. Bedroom Definition

The TGC reviewed bedroom definitions from the following states:

Alabama	Connecticut	Florida	Georgia	Hawaii	New Mexico
Massachusetts	Maine	Missouri	Minnesota	Nebraska	New Jersey
N. Carolina	Ohio	Oregon	Rhode Island	Texas	Utah
Vermont					

The TGC also reviewed the International Building Code definition of bedroom, several dictionary definitions and reviewed Idaho's history from a rule perspective. Blacks Law Dictionary does not define bedroom.

The committee worked on developing a definition of Bedroom.

Bedroom. Any room within a dwelling that may be primarily used for sleeping and consists of the following elements:

1. Floor space of at least ninety (90) square feet.
2. Provides privacy to the occupants.
3. Provides one (1) or more window(s) or door(s) suitable for emergency escape and rescue (IBC requires 5.7 square-feet for egress); and
4. Provides one (1) or more interior methods of entry or exit.

Living rooms, dining rooms, kitchens, halls, bathrooms, are not considered bedrooms. Any room shall be considered as a portion of an adjoining room when at least one-half of the area of the common wall is open and unobstructed. An unfinished basement that has at least one (1) separate entry and exit, one of which is suitable for emergency escape and rescue, shall qualify as a minimum of one (1) bedroom. A bedroom may include a room listed as a den, study, office, library, sewing room, or craft room on building plans if the conditions listed above are met.

The TGC recommended that this definition be included in the proposed rules section of the TGM and that the TGC develop a policy recommendation to DEQ.

The Corwin, B.K. et al paper titled " Residential Design Flow Projections: What Constitutes a Bedroom?" was reviewed by the TGC. Williamson County, Dept of Sewage Disposal Management 2002.

Dan moved to recommend the DEQ adopt the definition of bedroom as a preliminary policy to be placed into the TGM. Ken seconded the motion. The motion passed.

System Review - Sand Mound

The coordinator presented to the committee a draft revision to the sand mound alternative. The draft revision changes were based on new information from the University of Wisconsin. (Converse, J.C. and E. J. Tyler, 2001. Wisconsin Mound Soil Absorption System: Siting, Design and Construction Manual. 30 pgs. Small Scale Waste Management Project, University of Wisconsin-Madison, College of Agriculture and Life Sciences.) The TGC discussed the proposed changes and had reviewed the reference paper. The committee made changes to the proposed text and revisions to the Description Diagram. Brian moved to make a preliminary approval and recommendation to DEQ to adopt the revised Sand Mound Alternative. Dan Seconded the motion and the motion passed.

Public Comment Opportunity

The TGC asked if there was anyone from the public that wished to present information to the

Committee. No one requested the opportunity to present to the committee.

TGM Printing Strategy
The TGC was informed that DEQ was moving toward an electronic documentation protocol and that the TGM would no longer be printed and sent out to owners. Owners would be able to use the internet to print updates or read the TGM in a more timely fashion. A final printing of the TGM is pending.

Sanitary Restrictions
A. Health Certificate #3. Was approved by the Attorney Generals office and would begin to be implemented by the DEQ regional offices.

B. Proposed Revisions to Idaho Code. The Association of Idaho Cities and Idaho Association of Counties are jointly working with the Engineering Board and DEQ to revise Idaho Code Title 50 Chapter 13 Plats and Vacations. Changes are proposed to several sections of the code and three subcommittees have been established: Planning; Plats and Vacations; and Irrigation Districts and Mosquito Abatement Districts. DEQ and some Health Districts have been involved in the Plats and Vacation Subcommittee. A hand out of the proposed changes was provided to the TGC.

The TGC recommended that DEQ develop changes to the DEQ/HD MOU with respect to the Enforcement Protocol for implementing sanitary restrictions on plats.

Issues from the Field
A. Drainfield Abandonment and Well Setback. Concerns about abandoned drainfields in areas that are not provided public water systems led to a discussion on drilling individual wells. An example from Oregon was discussed in which a 100 foot setback from a drilled well to an abandoned drainfield. The TGC discussed the issue and reiterated that for a drainfield to be abandoned it will have to have been disconnected for one (1) year. The TGC made several recommendations:

1. Meet the Plumbing Bureau Abandonment criteria for septic tanks
2. Recommend that wells be drilled 100 feet from abandoned drainfields
3. Follow the one (1) year time frame for abandonment to be effective.
4. Follow Water Resources Well Drilling Program for setbacks.

B. Standard Absorption Bed – Guidance. The TGC reviewed a letter from Central District Health Department that recommended the TGC adopt a new section for the TGM called "Standard Absorption Bed." The TGC discussed this suggestion and as this system is adequately described in the rules at this time. The TGC felt there was no need for a new section. The committee asked for greater detail of what type of information should be part of the TGM and discussed any addition should appear in the TGM in the Standard System section.

C. Extra Drainrock Trench / Gravelless Trench Conditions for approval. A second suggestion was to revise the Extra-Drain Rock alternative conditions of approval. The suggestion was to delete that the site is not large enough for a standard system. This condition does not exist for Gravelless Trench alternatives and should not be a condition of approval for Extra-Drain Rock systems. The TGC discussed this suggestion. Joe moved to issue a preliminary recommendation that DEQ strike from the Extra-Drain Rock alternative Condition of Approval #1. Ken seconded the motion and the motion passed.

D. Extended Treatment Package System Monitoring Conditions. A third suggestion was to amend the Extended Treatment Package System (ETPS) section of the TGM to allow flexibility for systems that treat nitrogen and to amend the numeric value for achieving total nitrogen reduction. The suggested language change is for page 39 section d. monitoring 3.) :

> 3.) For those systems installed in nitrogen sensitive areas or are used as part of a nutrient-pathogen study, the following additional constituents will be monitored in addition to BOD and TSS: Total Kjeldahl Nitrogen (TKN) and Nitrate-Nitrite nitrogen (NO3+NO2-N). Results for Total Nitrogen (TKN + NO3+NO2-N) that exceed ~~24~~ ~~mg/l indicate that the treatment device is not achieving the required 40% reductions~~ the levels stipulated in the subdivision approval for sanitary restrictions release or the nutrient pathogen study approval indicate that the device is failing to achieve the required reductions.

Ken moved to issue a preliminary recommendation to DEQ to revise ETPS section 2. D as presented. Joe seconded the motion and the motion passed.

E. Septage Land Application Site Certification. DEQ Regional Office prepared revised guidance for Domestic Septage Treatment Site – Application for Site Approval. The TGC reviewed the information provided. Ken noted that the revisions were acceptable and that his district has two land application sites, both are approved by DEQ. The materials need to be reviewed such that the concept of guidance is preserved. The TGC recommended to revise the document in all locations that stipulate requires or required. The TGC recommended that as this is a DEQ function retained by DEQ as per the DEQ/HD MOU that the agency should follow its guidance development process, solicit comments, and post on the DEQ webpage.

F. Standard System Section Figure 1 and PWS well setbacks. A DEQ Regional Office reports the misinterpretation of Figure 1 in the Standard System Section of the TGM. Apparently some engineers are not aware that the separation distance for public water supply wells is 100 feet and this diagram of a single family dwelling indicates a 50 foot setback. This diagram has been used to document that the 50 setback is adequate, despite the requirements stated in the rules. The suggestion is to amend the diagram to note the requirement is 100 feet for PWS wells. Dan moved to issue a preliminary recommendation that DEQ revise Figure 1 of the Standard System Section to indicate the separation distance from a septic tank to a public water supply well is 100 feet. Ken seconded the motion and the motion passed.

The committee adjourned at 5:00 pm

APPENDIX A
FINAL TGC Minutes
December 11, 2002

TECHNICAL GUIDANCE COMMITTEE
FOR INDIVIDUAL AND SUBSURFACE SEWAGE DISPOSAL

December 11, 2002 MEETING MINUTES

PRESENT: Joe Canning, P.E., B&A Engineers
Rex Browning, Licensed Installer
Barry Burnell, REHS - DEQ
Dan Kriz, Environmental Health Director, SCDHD
Ken Babin, Supervisory REHS, PHD
Mike Reno, REHS – CDHD

GUESTS: John Robinson, Infiltrator Systems Inc.
Kelly McConnell, Infiltrator Systems Inc./Givens Pursley
Mark Mason, P.E., DEQ-Wastewater Program

The meeting was called to order at 8:30 am December 11, 2002. A sign in sheet was passed to the Committee and guests to sign in. The guests were asked to sign in and indicate if they were interested in presenting to the committee. No one indicated an interest to provide testimony.

December 4, 2001 TGC minutes - review, amend, and accept.

The Committee reviewed the minutes. Joe Canning moved that the committee accept the minutes. Ken Babin seconded the motion and the committee voted in favor of accepting the 12/04/2001 TGC minutes as final. **See Appendix A**.

TGC Preliminary Approval Reviews for Final Approval
A. Drip Distribution System
The Committee discussed the drip distribution system for inclusion into the TGM. The Committee reviewed the comments submitted by the public. Suggested changes were discussed and made to several sections. A summary of the changes made to the drip distribution system section are listed below.

Conditions of Approval:
Condition of Approval #1 was amended to include a citation for the large soil absorption systems. This condition was amended to indicate that if pretreatment systems are used, then the soil separation distances indicated by the pretreatment method would apply to the location of the drip distribution piping. Condition of Approval #2 was deleted, as this condition was a restatement of the rules.

Design:
Element #4 was modified to allow for use of smaller mesh filters.
Element #10 was revised to delete the use of trademark nomenclature.

Construction:
Element #10 was modified to include a requirement that the drainfield area is to be suitably re-vegetated.

Figures:
The TGC requested that Figure 1 include the option to route the field flush line straight to the septic tank rather than through the filter, valve, and meter box. The TGC requested an additional figure of the filter, valve, and meter box assembly.

Ken Babin moved to accept for final approval the Drip Distribution System section as amended during discussion. Joe Canning seconded the motion and the committee voted in favor of **final approval**. **See Appendix B** TGM page 33-1 to 33-5.

B. Graywater System
The Committee discussed the graywater system for inclusion into the TGM. The Committee reviewed the comments submitted by the public. Suggested changes were discussed and made to several sections. A summary of the changes made to the graywater system section are listed below.

Description:
The description was amended to include discharges from water softeners as part of the graywater waste stream. Discussion was focused on recharge rates and frequencies.

Conditions of Approval:
The Committee discussed the conditions of approval and made several changes. Condition #3 was modified from requiring the graywater tank to meet the criteria of a septic tank to being a tank that is watertight and non-corrosive. Condition #6 was deleted. This was a limitation for graywater systems to be applied only to individual dwellings.

Other Requirements:
The Committee discussed the valves and plumbing of a graywater system. The Committee added a sentence to Other Requirement #2. "Ball valves are recommended to be used in the system."
Other Requirement #3 surge tanks and system venting was reviewed and changes were made to this subsection to establish acceptable tank and venting designs. As a result the figures were modified to resolve venting design issues. If the surge tank is within the structure, then the venting must meet the requirements of the Uniform Plumbing Code. Outside surge tanks shall be vented with a 180° turn and are screened to prevent access to the graywater by insects.
The label requirement was moved from the side to the access lid.
Other Requirement #4 filters. This section was revised to read: "Filters with a minimum flow capacity of 25 gallons per minute are required."
Other Requirement #6 Irrigation Systems. Delete the experimental descriptor for drip distribution systems.

Figures:
The Committee modified the figures by eliminating the depiction of the ground surface, and to move the label from the side of the surge tank to the tank access lid.
The Committee requested that DEQ develop an informational graywater system brochure.

Joe Canning moved to accept for final approval the Graywater System section as amended during discussion. Rex Browning seconded the motion and the committee voted in favor of **final approval**. **See Appendix C** TGM page 42-1 to 42-6.

DEQ Update on Proposed Rules

The Onsite Coordinator informed the Committee that the DEQ Board had adopted the proposed rules and were pending legislative confirmation. The Committee was informed that the rules did not receive favorable public comments on the wastewater flow section from the districts, counties and from the Building Contractors Association. The Building Contractors Association was also opposed to the factors that were negotiated to determine the conditions under which reasonable access to central wastewater treatment facilities would be reviewed. The TGC role in rule making has been severely hampered as a result of the negotiation process and the additional review steps DEQ is directed to conduct.

Committee members strongly voiced their opinions on wasting Committee time in developing rule packets, proposed rules, printing and distributing proposed rules to have Health District Staff oppose the proposed rules during negotiations and public comment periods rather than voicing these concerns with the Committee. The Committee recognizes the public and political process that rules must go through, but feels that the Committee's time spent developing the rules needs to be fairly evaluated. The Committee questioned the value of preparing proposed rules. Problems noted by the Committee in the proposed rules are changes in the Committee's recommendation for estimating wastewater flow from single family dwellings, and the language developed for the homeowner/installer exemption.

The Committee discussed the changes in the pending rule and the deletions of the flow section as an attempt to resolve the problems with the rule. The release of sanitary restrictions at the time plats are signed does not obligate the districts to issue an onsite permit. Site conditions may change, roads and easements may be issued, rules may change, or site soils may be modified as a few examples of changes that may result in a site no longer meeting the criteria.

(Note the rules were rejected back to DEQ by the legislature. See HCR 16 at the following webpage: http://www3.state.id.us/oasis/HCR016.html)

TGC Updates

The Committee reviewed the list of TGM updates. The TGC discussed the requirement for a structural engineer to stamp/certify septic tank designs that specify use of structural engineering fibers. Information was provided as an issue from the field for a request to reconsider this requirement. Civil engineering and structural engineering project types were reviewed. Some civil engineers have experience with structural reinforcing fibers if they have worked on catch basins, vaults, roadways, pre-cast structures, and airports for example. Some liability is retained by the civil engineers for these designs.

Ken moved, based on Joe's recommendation, that the TGM be modified so that a professional engineer with experience in the use of structural reinforcement fibers are allowed to stamp septic tank plans and specifications. Mike seconded the motion and the Committee voted in favor of the motion.

TGM page 23, section 2.b. Concrete septic tank reinforcement shall read:

2. Concrete Tanks

b. Reinforcing steel shall be ASTM A-615 Grade 60, f_y = 60,000 psi, details on placement shall be in accordance with ACI 315 and ACI 318 or equivalent as certified by a licensed professional engineer experienced in the use of structural reinforcement fibers.

Product Reviews

1. Eljen Xpandable Chamber.

The committee was given a packet of information from the Eljen Company requesting approval for use in Idaho of the Xpandable Chamber. The committee expressed concern over the anti-siltation fabric collapsing during backfilling and the void area being filled with dirt. Concern was also expressed about the product collapsing under backfill conditions along the sides. The Committee asked if there was provided any track record and testing information. The committee noted that the information provided about the product did not indicate if in any other state had granted approval of the product.

Dan Kriz moved that the committee table the product review until additional information is provided and requested information be provide on the following topics:

1. Soil support for anti-siltation fabric. How much soil can the fabric support;
2. Provide a list of other state approvals; include number of years approved and number of systems installed; provide state agency contact; and provide basis for the state approval;
3. Describe how unit sidewalls will not collapse should the drainfield and surrounding soil become saturated and drained;
4. Describe loading limits of the product. Under what forces is the product crushed;
5. Describe how the product is consistent with other proprietary products;
6. Provide any independent third party testing data;
7. Provide any field tests or side by side tests with other products;
8. Provide any laboratory testing data; and
9. Provide an example of the product.

Rex Browning seconded the motion and the Committee voted in favor to table the review.

Proposed Rules Development

1. Estimating Flows from Single Family Dwellings.

The Committee packet information was reviewed. Information reviewed was:

a. Proposed rule language on minimum septic tank capacities;
b. Wastewater flow from various establishments;
c. Septic system permit information for 2000;
d. EPA OWTS Manual 2002 section on flow from single family dwellings;
e. State by state comparison of single family dwelling flow estimates;
f. A review of the issues the Committee previously discussed; and
g. Options for the Committee to consider.

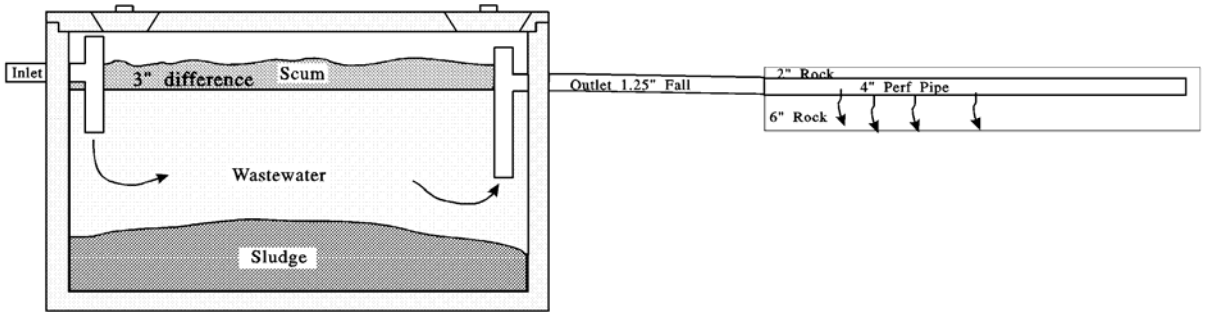
The Committee discussed the problem of revising the method of estimating flows from single family dwellings. Everyone recognized the problem of applying the current sizing approach to large homes. The Committee recommended collecting information on premature failures and failures in general to attribute a cause for failure. The Committee recommended the use of water meters for non-premature failures to positively identify if wastewater flow and hydraulic overloading the system is the cause of the failure.

The Committee developed the following replacement/failing system data to be collected during the investigation process for issuing a replacement permit:

1. Date original system was installed or was last replaced;
2. Wastewater flow or water consumption use;
3. Type of system use: e.g. residential, commercial, multiple residential, recreational, etc….;
4. Existing and replacement system drainfield ft²;
5. Soil type for failed system (from Permit) and soil type for replacement system; and
6. Original system and replacement type: drainfield, gravelless alternative, sand mound, ATU etc…..

The Committee recommended that the onsite coordinator propose to the Council of Environmental Health Directors that these data elements be collected and reported to DEQ and the TGC for use in developing revised rules. The current DEQ/HD MOU requires that the health districts and DEQ develop performance reporting for various programs and that the districts will provide to DEQ performance reports. These failing system data elements could be part of the performance reporting.

2. Grade from the Septic Tank to the Drainfield. The Committee discussed revising the standard system section rules to require that the fall from the septic tank to the drainfield be a minimum of 3 inches. The rational for the three inches of fall is to ensure that the entire profile of the drainfield is flooded prior to a backup from the septic tank to the house black waste line.



Septic Tank

Under the current design minimums, the drainfield is typically placed 10 feet away from the septic tank, with a 1/8 inch/ft of fall to the drainfield manifold. This places the drainfield 10/8" or 1.25 inches deeper than the invert of the septic tank outlet. When a back up begins to occur in the drainfield, the septic tank will start to be flooded prior to the entire sidewall area of the drainfield from being used (see figure). The drainfield will have 6 inches of effluent below the pipe, 1.25 inches of effluent in the pipe for a total sidewall area of 7.25 inches in the drainfield that is flooded. The tank will start to pond and the 3 inch difference between the inlet and outlet of the septic tank results in 10.25 inches of the trench sidewall being flooded at the point where there would start to be back up into the blackwaste pipe. This leaves 1.75 inches of trench sidewall yet to be used for infiltration when the wastewater starts to backup into the blackwaste pipe. By requiring a 3 inch fall from the tank to the drainfield, rather that the 1.25 inch fall, the entire drainfield will be flooded prior to wastewater backing up into the blackwaste pipe. When

the entire drainfield sidewall (12 inches) is used there is 6 inches below the drainfield pipe, 3 inch fall from tank to drainfield, and 3 inches from the tank outlet invert to tank inlet invert.

Under current conditions when the standard drainfield is completely ponded, the wastewater is standing in the blackwaste pipe by 1.75 inches (6 inches in drainfield, 1.25 inches fall from tank to field, 3 inches of septic tank storage, and 1.75 inches of storage in the blackwaste pipe).

Notes: 1.) The dwelling blackwaste pipe is required by the plumbing bureau to have a fall of ¼ inch/ft and with a typical 10 foot pipe from cleanout to septic tank results in a fall of 2.5 inches. 2.) Experiencing of slow draining fixtures may be occur in the dwelling as a result of water use and the surcharge of wastewater in the septic tank.

Under the proposed change, when the standard drainfield is completely ponded there is no storage of wastewater in the blackwaste pipe (6 inches in drainfield, 3 inches fall from tank to field, 3 inches of septic tank storage). In most cases the result of requiring 3 inches of fall from tank to drainfield will be insignificant. Occasionally, a septic tank may need to be placed 1 ¾ inches higher in the soil profile in order to make grade to a drainfield that has restrictions to limiting layers.

The proposed change to the rule is to add a new row to the Subsurface Sewage Disposal Facility Table on page 122 of the TGM. The new row would be:

Item	All Soil Groups
Grade from the Septic Tank to Drainfield	3 inch Minimum Fall

3. Absorption Bed Criteria.

The Committee discussed the language in section 008.10 on absorption beds and decided that the word basic should be deleted from the proposed language changes. The committee recommends that consideration of all alternatives be given prior to issuing a permit for an absorption bed. This recommendation recognizes the importance for sidewall area in drainfield systems. The proposed language is:

> 10. Standard Absorption Bed. Absorption bed ~~disposal~~ treatment and distribution facilities may be considered when a site is suitable for a standard or ~~basic~~ alternative subsurface ~~disposal~~ treatment and distribution facility except ~~it~~ the site is not large enough.

The Committee discussed the use of absorption bed as a substitute for a standard system when property area is limited or restricted. By striking the work “basic” from the proposed rule text, this allows for the use of pressure distribution systems and absorption beds on the small lots that need to lift the effluent. The rules do not allow the use of absorption beds for large soil absorption systems.

4. Use of Equipment on Infiltrative Surfaces.

The Committee discussed the language in section 008.06 Excavation in relation to 6 foot wide trenches and the use of small excavator equipment on the soil infiltrative surface. Installers have used small excavator equipment (bobcats) on the infiltrative surface for placing gravel during construction of the drainfield. The equipment smears and compacts the soil reducing its

infiltrative capacity. Remedies were to re-excavate the trench or scarify the compacted soils. Arguments from installers not wanting to remove gravel and re-excavate the trenches argue that the practice is not specifically prohibited by rule.

The Committee proposes the following revision to section 58.01.003.008.06 Excavation (TGM page 122):

> 06. Excavation. Trenches will not be excavated during the period of high soil moisture content when that moisture promotes smearing and compaction of the soil. Use of construction equipment or other activities that may compact the soil infiltrative surface is prohibited. Backhoes and smaller earth moving equipment are prohibited from being operated on the infiltrative surface.

New System Development - Constructed Wetlands

The Committee discussed the Subsurface Flow Constructed Wetland paper. The design in the paper is for use with single family residences and sets minimum standards for design and monitoring. The system could be used for either new or replacement systems. DEQ has some funds that could be used to collect and analyze wetland system effluent samples for treatment efficiencies. The Committee approved the Subsurface Flow Constructed Wetland paper as an experimental system. **See Appendix D** for a copy of the revised Subsurface Flow Constructed Wetland paper.

Issues from the field

A. Recording Easements. Joe Canning was asked by the committee to find out the minimum requirements for recording easements for onsite wastewater systems. The Board of Professional Engineers and Professional Land Surveyors (PE&PLS) replied back to the TGC that "if a survey is conducted in the field as required in Item #5 of the DEQ TGM, then the points must be monumented and a 'Record of Survey' prepared and recorded." The PE&PLS Board tells us that we need to have a record of survey prepared and recorded for easements. The easement site should be determined to be an acceptable location prior to preparing the easement document. If the site will not work, it makes no sense to prepare an easement. Once the site has been investigated and approved, the easement document can be drawn up, signed by both parties, recorded with the county clerk, and submitted to the District staff. The District staff can issue the permit once the signed and recorded easement is submitted. The system can be installed and the surveying and monumenting of the easement site completed and recorded as a final step in the inspection – approval process.
Suggestions were made to strike some language in section 3 of the TGM Easement page 30-1 so that the districts could required recorded easements prior to issuing permits. This authority already exists. An application that proposes to use easement land (for primary or replacement drainfield areas or for other system components) that is not part of the legal description of the property, are to be considered incomplete applications (See section 005.04.b and l. of the rules). The districts shall ask for recorded easements or agreements as per the application section of the rules. The easement page provides criteria to complete the legal description. Surveying and monumenting the easement site can be completed after installation and a supplemental record filed with the county clerk.

B. Pumps and Electrical Code. The December 21, 2001 letter from the Electrical Bureau was

reviewed as it relates to pressure distribution system electrical requirements for pumps, controls and alarms. Individual residential dosing chambers are considered unclassified (non-hazardous) by the National Fire Protection Association (NFPA) 820. Therefore the Electrical Bureau does not require the use of explosion proof box for the electrical connections. The Electrical Bureau does require a seal off and use of a weatherproof box.

However, multiple residential and commercial installations are considered classified as (hazardous) due to higher levels of flammable methane gases present. For commercial and multi-residential doing chambers the Electrical Bureau does require the use of explosion proof box and seal off. All septic system electrical equipment is required to be listed and installed in accordance to the National Electrical Code (NEC).

The TGC reviewed the pressure distribution system section and discussed making changes to the TGM in accordance with the recommendations received from the Electrical Bureau. A summary of the changes made to the pressure distribution system section are listed below:

TGM page 56, 5.c. Other Pump Considerations

- Bullet #3. Replace the text "compression coupling" with "unions".
- Bullet #4. Replace the text "State Electrical Department" with "Division of Building Safety, Electrical Bureau" and add at end of bullet "for multiple residential and commercial installations."

TGM page 58, 7. Dosing Chamber

- Revise the figure to indicate that a weatherproof box is acceptable for individual residential systems and that the conduit can be rigid non-metallic schedule 80 PVC. Note that the explosion-proof box is required for multiple residential and commercial applications.

TGM page 58-9, 7.c Electrical Requirements:

- Revise language in 2) to reflect changes in electrical requirements and suggested language changes from the Electrical Bureau.
- Revise figure in 4) by adding "weatherproof or" to text describing electrical box (TGM page 59).
- Revise language in 5) and 6) to refer to the Division of Building Safety, Electrical Bureau.
- Revise figure in 6) to indicate the use of rigid or rigid non-metallic (SCH 80 PVC) conduit is acceptable materials to run electrical wire, and add weatherproof to the descriptor for the connection box.

Joe Canning moved that the Committee issue **preliminary approval** for the changes in the TGM on pages 56, 58, and 59. Mike Reno seconded the motion and the committee voted in favor of the motion. Text and figures on TGM pages 56, 58 and 59 have been revised as suggested by the TGC in order to depict the requirements of the Electrical Bureau. **See Appendix E** for revised TGM pages 56, 58-59.

C. Septic Tank Reinforcement Design Standard – Addressed during the TGC Update Section

discussion. See page 3, TGC Updates of these minutes.

D. Scaled Plot Plan Tools. The Committee discussed the suggestion of developing standardized or scaled plot plan tools. The suggestion was to develop a standardize ruler scaled with some of the separation distances, such as well to drainfield 100 feet, tank and drainfield dimensions, with a scale of 1inch = 20 feet. A hand out was reviewed. The Committee reviewed the materials and agreed that they would be helpful for homeowners with plenty of land to use for their system layout and design. The Committee was concerned that the tools might not work for parcels that have a minimum amount of land. Lots with tight dimensions need scaled plot plans prepared by the installer or Engineer. The materials could be used as a handout, but were not accepted for incorporation into the TGM.

E. ATUs and Trash Tanks. The Committee reviewed the following article: Converse, James. August 2001. Aeration Treatment of Onsite Domestic Wastewater: Aerobic Units and Packed Bed Filters. Small Scale Waste Management Project, 43 pages. The question posed to the Committee was "what are the requirements for use of tanks ahead of ATUs for Idaho?" The Committee determined that the ATU manufacturer should require as a minimum, the same tank design used to achieve NSF Standard 40 Certification. If the site-specific characteristics of the wastewater quality or quantity require surge capacity or storage of wastewater, then the manufacturer's recommendations should be followed for those site-specific projects.

DEQ issued Guidance for Private Community or Central Wastewater Treatment Plants, See: http://www.deq.state.id.us/water/wastewater/guidance_PrivateWWTreatment.doc The guidance requires:

3) For flow equalization ahead of the wastewater treatment plant, a properly sized tank with appropriate pumping should be provided.

Influent flow rates need to be at a rate that the ATU is designed to process. Units that can't process the wastewater and fail to achieve the 30/30 mg/l BOD/TSS may need to include flow equalization. The need for flow equalization is different for each ATU, some will need it and some won't. Follow the ATU design recommendation for each project. Retrofit with additional tanks after all O&M methods have failed to achieve the BOD/ TSS limits.

F. Sand Mound Information. The Committee directed the onsite coordinator to make changes to the sand mound section of the TGM based on the latest research and to bring the changes back to the Committee at the next meeting.

G. Ranking Alternative Systems. The committee did not have time to review the concept of ranking alternative systems. This agenda item is held over for the next meeting.

H. Total Nitrogen Reduction. The committee did not have time to develop a policy on Total Nitrogen Reduction for alternative systems. This agenda item is held over for the next meeting.

I. Soil Compaction of the infiltrative surface. Addressed during the Proposed Rule Section Discussion. See page 6-7 Use of Equipment on Infiltrative Surfaces.

The committee adjourned at 5:00 pm

APPENDIX B
Pressure Distribution System

PRESSURE DISTRIBUTION SYSTEM

Description. A low pressure system of small diameter perforated plastic pipe laterals, manifold, pressure transport line, dosing chamber and a pump or siphon.

Conditions for Approval.

1. The pressure distribution system is to be used whenever it is desirable to:
   a. Maintain a uniform application rate throughout the drainfield.
   b. Treat and dispose of effluent in the uppermost levels of the soil profile.
   c. Aid in mitigating the potential contamination of groundwater in areas of excessive permeability.
   d. Improve the performance and increase the life span of a drainfield.

2. Pressure distribution may be used in sand mounds, sand filters, sand-filled trenches and standard trenches in aquifer-sensitive areas or in large drainfields. Geotextile filter fabrics are required to be used for cover over pressure distribution systems.

3. These guidelines provide for a simple strategy of design to assist the non-engineer. They are not intended to supplant or limit engineering design or other low pressure systems. The guidance should not be used where laterals are at different elevations (elevation differences greater than 6") or for systems with daily flows over 2,500 gallons. Plans for systems with designs different than those provided herein shall be reviewed by the Department of Environmental Quality. The following guide is recommended for pressure system design outside of these guidelines:

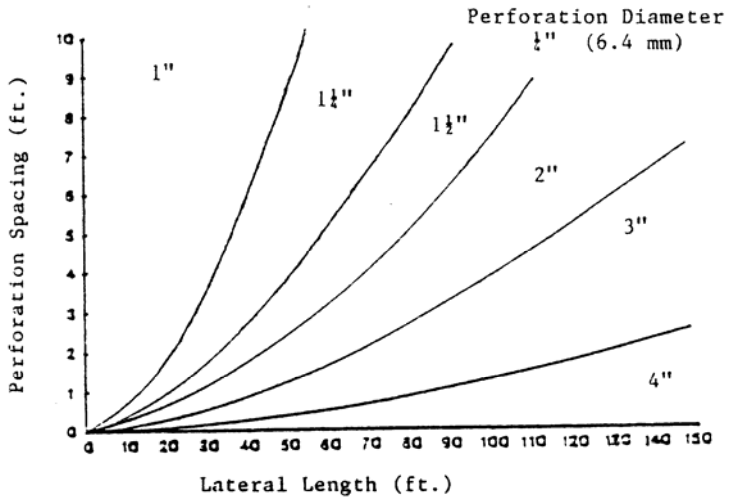
   Otis, R.J. 1981. Design of Pressure Distribution Networks for Septic-Tank Absorption Systems. Small Scale Waste Management Project Publication #9.6. University of Wisconsin, Madison, WI.

Design.

1. Laterals
   a. The lateral length should be shorter than the trench length by at least 6" but not more than one-half the orifice spacing.
   b. Laterals in trenches should be placed equidistant from each side.
   c. The lateral spacing in beds is typically 3 to 6 feet. The outside laterals should be placed at one-half the selected lateral spacing from the bed's edge.
   d. A preliminary estimate of orifice spacing should be made. Normally, the first estimate will be one-half the lateral spacing. For most installations the spacing will be between 18" and 36".
   e. The orifice diameter should be ¼" (0.25"). A residual head of 2.5 feet is used for calculating flows and pump size. The flow through each orifice at that head will be 1.17 gallons per minute. Testing of the residual head shall be made on each lateral for terraced systems. Testing may be accomplished by placing the last orifice on a lateral in the up position and plugging the orifice with the lateral end cap or placing a screw in the orifice.

PRESSURE DISTRIBUTION SYSTEM (Cont'd)

f. Determine the lateral diameter from the following figure: (if a smaller diameter orifice is used, flow will change and the following table cannot be used).



g. The laterals should not exceed the lengths below for the pipe anticipated to be used.

Lateral Diameter, Inches	Orifice Spacing, Feet	Schedule 40	Class 200	Class 160	Class 125
1.0	1.5	16.5	21	21	-
1.0	2.0	20	24	24	-
1.0	2.5	22.5	27.5	27.5	-
1.0	3.0	27	33	33	-
1.25	1.5	27	30	31.5	31.5
1.25	2.0	32	36	38	38
1.25	2.5	37.5	42.5	45	45
1.25	3.0	42	48	48	51
1.5	1.5	34.5	39	39	40.5
1.5	2.0	42	46	48	50
1.5	2.5	47.5	52.5	55	57.5
1.5	3.0	54	60	63	63
2.0	1.5	52.5	55.5	58.5	60
2.0	2.0	64	68	70	72
2.0	2.5	72.5	77.5	80	82.5
2.0	3.0	81	87	90	93

PRESSURE DISTRIBUTION SYSTEM (Cont'd)

h. Calculate the lateral and total discharge rates:

Lateral Discharge Rate, gpm = 1.17 x number of orifices
Total Discharge Rate, gpm = Lateral Rate x number of laterals

i. Individual ball valves shall be installed on each lateral to balance residual head on terraced systems.

2. Manifold: Determine the manifold size from the following Table:

Lateral Discharge Rate (g.p.m.)		Manifold Diameter = 13"	Manifold Diameter = 12"	Manifold Diameter = 2"	Manifold Diameter = 3"	Manifold Diameter = 4"
Manifold		Lateral Spacing	Lateral Spacing	Lateral Spacing	Lateral Spacing	Lateral Spacing
End	Central	2 4 6 8 10	2 4 6 8 10	2 4 6 8 10	2 4 6 8 10	2 4 6 8 10
10	/ 5	4 8 6 8 10	10 8 12 16 20	12 16 24 24 30	26 40 48 56 70	42 64 84 96 110
20	/ 10	4 4 6	4 4 6 8 10	6 8 12 16 20	16 24 30 32 40	26 40 54 64 70
30	/ 15	2	2 4 6	4 8 6 8 10	12 16 24 24 30	20 28 36 48 50
40	/ 20			4 4 6 8 10	10 12 18 16 20	16 24 30 32 40
50	/ 25			2 4 6 8	8 12 12 16 20	14 20 24 32 40
60	/ 30			2 4	6 8 12 16 20	12 16 24 24 30
70	/ 35			2 4	6 8 12 8 10	10 16 18 24 30
80	/ 40			2	6 8 6 8 10	10 12 18 16 20
90	/ 45			2	4 8 6 8 10	8 12 18 16 20
100	/ 50			2	4 4 6 8 10	8 12 12 16 20
110	/ 55				4 4 6 8 10	8 12 12 16 20
120	/ 60				4 4 6 8 10	6 8 12 16 10
130	/ 65				4 4 6 8 10	6 8 12 16 10
140	/ 70				2 4 6 8	6 8 12 8 10
150	/ 75				2 4 6	6 8 12 8 10
160	/ 80				2 4 6	6 8 6 8 10
170	/ 85				2 4 6	4 8 6 8 10
180	/ 90				2 4	4 8 6 8 10
190	/ 95				2 4	4 8 6 8 10
200	/ 100				2 4	4 4 6 8 10

Example A: Central Manifold
Lateral Q = 40 gpm
Lateral Spacing = 6'
Manifold Length = 18'
Manifold Diameter = 4"

Example B: Terminal Manifold
Lateral Q = 30 gpm
Lateral Spacing = 6'
Manifold Length = 24'
Manifold Diameter = 3"

3. Transport (Pressure) Line: Determine the diameter of the transport line from the following table. (The table is specifically for ABS schedule 40 pipe with a Hazen-Williams Coefficient of 150).

Friction Loss in feet per one hundred feet
Pipe Diameter, in inches

Flow, GPM	1"	13"	12"	2"	3"	4"
5	1.52	0.39	0.18			
6	2.14	0.55	0.25	0.07		
7	2.89	0.76	0.36	0.10		
8	3.63	0.97	0.46	0.14		
9	4.57	1.21	0.58	0.17		
10	5.50	1.46	0.70	0.21		
11		1.77	0.84	0.25		
12		2.09	1.01	0.30		
13		2.42	1.17	0.35		
14		2.74	1.33	0.39		
15		3.06	1.45	0.44	0.07	
16		3.49	1.65	0.50	0.08	
17		3.93	1.86	0.56	0.09	
18		4.37	2.07	0.62	0.10	
19		4.81	2.28	0.68	0.11	
20		5.23	2.46	0.74	0.12	
25			3.75	1.10	0.16	
30			5.22	1.54	0.23	
35				2.05	0.30	0.07
40				2.62	0.39	0.09
45				3.27	0.48	0.12
50				3.98	0.58	0.16
60					0.81	0.21
70					1.08	0.28
80					1.38	0.37
90					1.73	0.46
100					2.09	0.55
150						1.17

Example: The transport line will be 50" long and flow is calculated at 20 gpm. The headloss for 100' of 1 1/2" diameter pipe is 2.46'. For 50' it would be 1.23'.

4. Calculate the total head:

Total Head = E + T + R

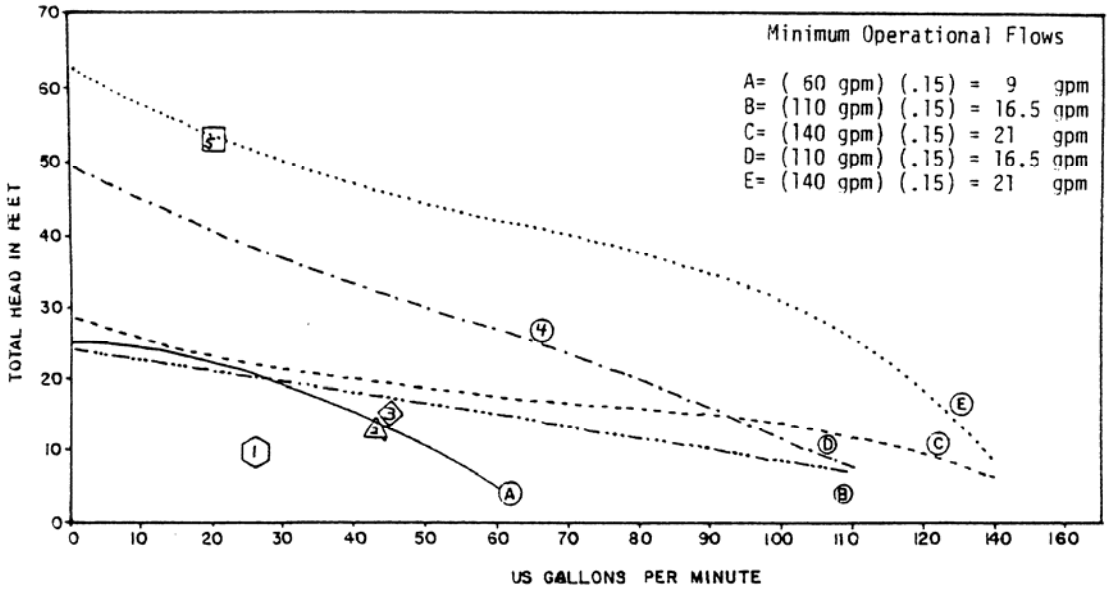
Where: E = elevation difference between the pump and the manifold.
T = transport pressure line head.
R = residual head (2.5 feet).

5. Pump:

a. Pump selection is a critical part of the system design package. It is based on the discharge rate and pumping head required for the system. Using the pump head-discharge rate curves supplied by the manufacturer, select a pump at the required head.

b. To help maximize pump efficiency, pump selection should also address maximum usable head. Select pumps where the operating point will be greater than 15 percent of the maximum pump rate (maximum gpm rating). For example, a pump with a maximum capacity of 80 gpm should only be used if the operational requirement is greater than 80 gpm x 0.15 or 12 gpm.

c. The preceding will help illustrate proper pump selection. Five pump curves are shown in the following example. In the upper right corner of the graph are the calculations showing the minimum operational flows based on the 15% pump curve efficiency requirement. In the table several system requirements are shown with the pumps ultimately selected.



System	GPM	TDH	Pump Selected	Comments
1	26	9'	A, B, or C	All pumps will work, but because of price and serviceability pump A, B or C were Selected.
2	43	13'	A, B, or C	Price and Serviceability
3	45	15'	B, or C	Pump A not adequate
4	67	26'	E	Pump D might be adequate. Check the operation point.
5	20	53'	N/A	20 GPM is less than 15 % of the maximum flow for pump E.

d. Other pump considerations:

- Pump should be specified for effluent.
- Pump should transfer solids as large as orifice diameter.
- Pump should be serviceable from ground level without the need to enter the pump chamber. PVC unions are available which assist in the easy removal of pumps.
- Pumps and electrical connections shall conform to the requirements of the Division of Building Safety, Electrical Bureau. Pumps must be kept submerged and all connections made outside the chamber in an explosion proof box for multiple residential and commercial installations. For individual residential systems the electrical connections may be made in a weatherproof box. Both systems require the use of a seal off. See figures and page 58-59 for details.
- Impellers shall be cast iron, bronze, or other corrosion-resistant material. Regardless of the material, the impeller may freeze if the pump remains inactive for several months.
- If for any reason a check valve is used, a bleeder hole should be installed so the volute is kept filled with effluent. Some pumps may run backwards if the impeller is in air.

6. Dosage.

a. Determine the dose volume by the following sets of design criteria:

1) Soil Type:

Determine the dose volume by dividing the average daily flow, in gpm, by the following recommended dosing frequency:

Soil Texture at Drainrock Interface	Doses per Day
Medium and fine sand	4
Loamy sand, sandy loam	1-2
Loam and finer soils	1

2) Dose/Volume Ratio:

a) The daily dose volume ratio should be at least 7 times the volume of the manifold and lateral piping which drains between doses plus one time the interior volume of the transport line. If the dose is too small, then the pipe network will not become fully pressurized or may not be pressurized for a significant portion of the total dosing cycle.

b) It may be necessary to modify the piping network configuration to reduce the pipe volume or space which drains between doses.

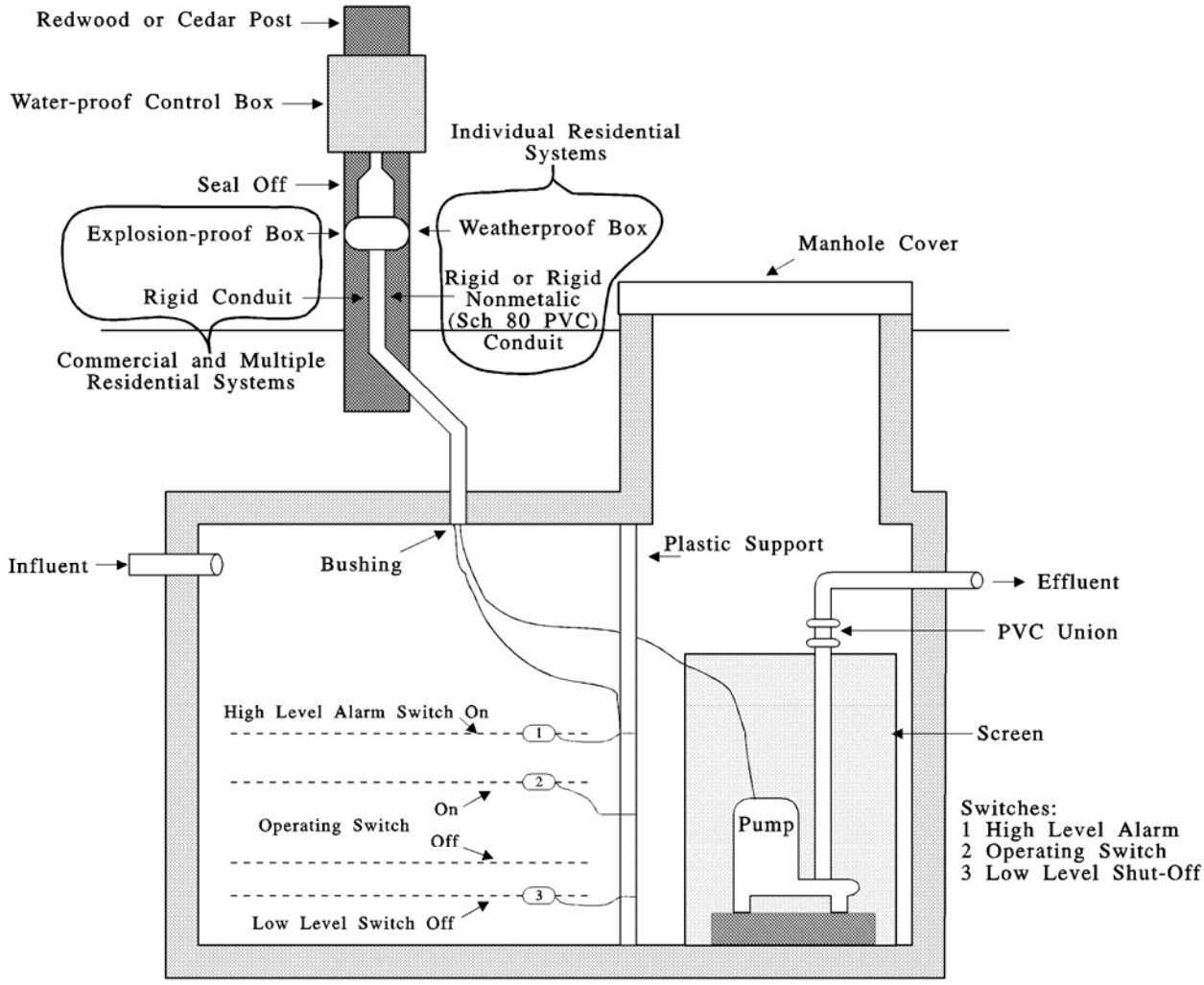
c) Use the following table to calculate distribution line, manifold, and transport line volumes. Calculate only pipe volumes that drain between doses.

Volume (Gal/ft of Length)

Diameter (Inches)	Schedule 40	Class 200	Class 160	Class 125
1	0.045	0.058	0.058	----
13	0.078	0.092	0.096	0.098
12	0.105	0.120	0.125	0.130
2	0.175	0.189	0.196	0.204
3	0.385	0.417	0.417	0.435
4	0.667	0.667	0.714	0.714
6	1.429	1.429	1.429	1.667

PRESSURE DISTRIBUTION SYSTEMS (Cont'd)

7. Dosing Chamber:



a. The dosing chamber must be watertight, with all joints sealed. Precautions must be made in high-groundwater areas to prevent the tank from floating.

b. A screen must be placed around the pump with 1/8" holes or slits of non-corrosive material and have a minimum of 12 square feet of area. Its placement must not interfere with the floats and it should be easily removable for cleaning. Effluent filter designs fitted with a closing mechanism are a suitable alternative to screens around pumps.

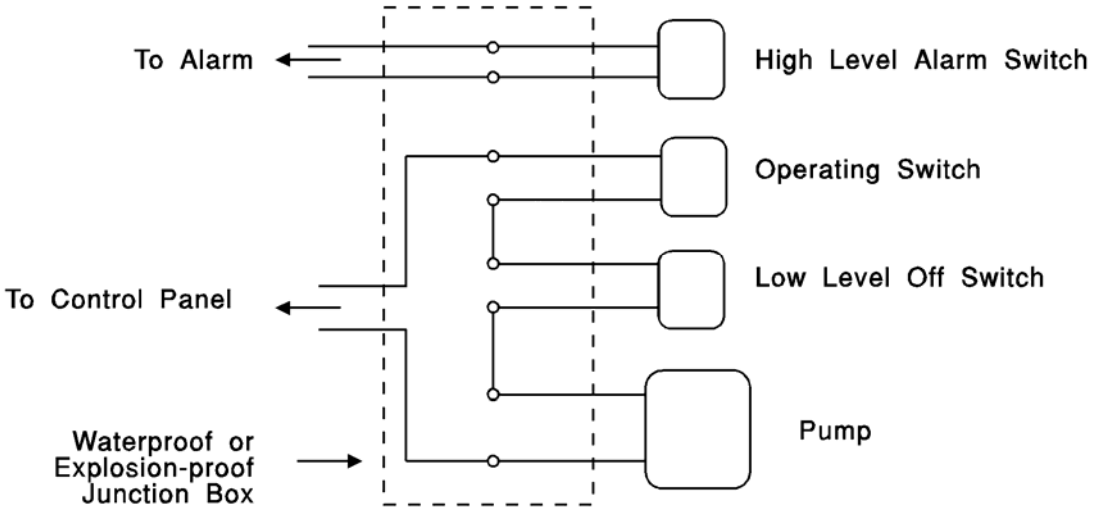
c. Electrical Requirements (Contact the Division of Building Safety, Electrical Bureau):

   1) Visual or audio alarms on a separate circuit from the pump must be provided to indicate when the level of effluent in the pump or siphon chamber is higher than the height of the volume of one dose.

   2) All electrical connections must be made outside of the chamber in either an approved weatherproof box or an explosion-proof junction box (Crouse-Hind Type EAB or equivalent). The lines from the junction box to the control box must pass through a sealing fitting (seal-off) to prevent corrosive gases from entering the control panel. All wires must be contained in solid conduit from the dosing chamber to the control box.

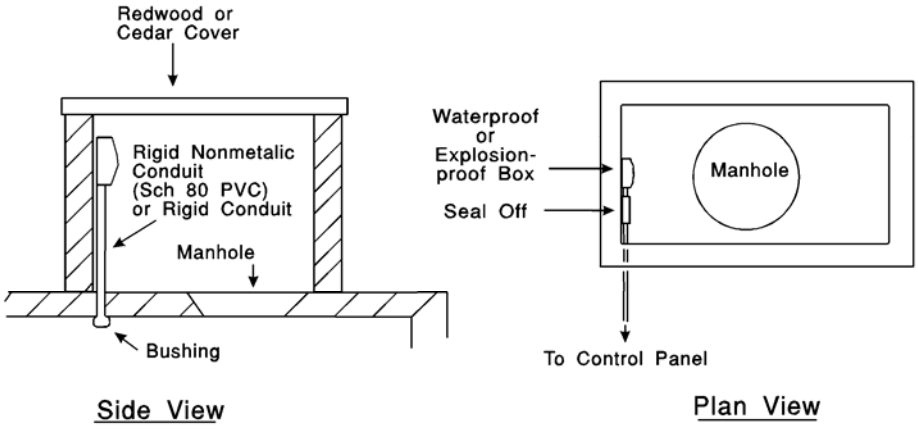
3) The minimum effluent level must be above the pump. This is the level that the low level off switch is set and should be 2" to 3" above the pump.

4) An acceptable circuit is shown in the following diagram:



5) Plans and schematics for the electrical installation should be approved by the Division of Building Safety, Electrical Bureau prior to installation and at the same time the permit is issued.

6) An alternative to placing the electrical connections on a pole is to place them in a dry well over the dosing chamber. The following diagram shows an arrangement acceptable to the Electrical Bureau:



d. The volume of the dosing chamber should be equal to at least two day's flow. A 750-gallon tank will provide sufficient volume to keep the pump covered with effluent, provide an 80-gallon to 120-gallon dose and store one day's flow for most single dwelling installations.

8. In-Tank Pumps. Placement of sewage effluent pumps in a septic tank is an acceptable practice under the following conditions:

   a. Sewage effluent pumps must be placed in an approved pump vault.

   b. The drawdown of effluent from the septic tank is limited to a maximum 120 gallons per dose with a maximum pump rate of 30 GPM.

   c. Septic tanks must be sized to allow for one days flow above the high water alarm, unless a duplex pump is used.

   d. The pump vault inlets must be set at fifty (50%) percent of the liquid volume.

   e. Placement of the pump vault inside the septic tank shall be in accordance with the manufacturer' recommendations.

   f. Pump vault screens shall be one-eighth inch (1/8") holes, or slits (or smaller); be constructed of non-corrosive material; and have a minimum of 12 square feet of area.

   g. Placement of the pump vault and pump must not interfere with the floats or alarm and pump vault should be easily removable for cleaning.